Comparison of Two Tailed Frog Sampling Methods in Headwater Streams of Southwest Washington

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Methods to sample headwater stream-associated amphibians have been largely based on best professional judgment and tradition. We compared the performance of two stream-associated amphibian sampling methods (rubble rousing versus rapid assessment) to determine abundance of Tailed Frog in the Coast Range of Washington (Stillman Creek watershed) during late summer 2003. We applied the two methods in rapid succession to multiple 1 m bands across 10 streams. Rapid assessment involves searching for individuals in and around easily moved surface objects in the stream and is typically applied to a relatively large proportion of the sample units because of its low relative cost. Rubble rousing on the other hand involves shifting though sediments to a depth of 30 cm (or bedrock) and is typically applied to small proportions of the sampling unit because of high relative cost.

Tailed Frog abundance determined by rapid assessment was not correlated with abundance determined by rubble rousing. Rapid assessment produced biased (low) estimates of tailed frog density but with lower within and across reach variance. However, the bias associated with rapid assessment increased as a function of rubble rousing density. In other words, across a range of densities (determined by rubble rousing), rapid assessment tended to capture a constant number of individuals. This bias renders rapid assessment as an inappropriate sampling method for determining trends in densities through time. Rapid assessment may still be the best sampling approach for determining occupancy of Tailed Frogs because it tends to find frogs in the same areas rubble rousing finds frogs but at a lower cost.

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